

NOTE TO SIPRAC: This draft is also available on the OTC website at:
http://www.otcair.org/projects_details.asp?FID=99&fview=stationary#
The posted draft is now under review and a new draft will be posted soon.

This model rule was developed by the Ozone Transport Commission (OTC) as part of a regional effort to attain and maintain the eight-hour ozone standard, and reduce eight-hour ozone levels. States opting to promulgate rules based on this model rule will utilize State-specific administrative requirements and procedures.

OTC Model Rule For Adhesives and Sealants.

I. APPLICABILITY

This rule is applicable to any person who supplies, sells, offers for sale, or uses adhesives, sealants, or adhesive or sealant primers. All provisions in this rule, unless otherwise indicated, shall become effective on (upon adoption date).

II. DEFINITIONS

For the purpose of this rule the following definitions apply:

- A. ACRYLONITRILE-BUTADIENE-STYRENE (ABS) WELDING ADHESIVE is any adhesive intended by the manufacturer to weld acrylonitrile-butadiene-styrene (ABS) pipe. ABS pipe is made by reacting monomers of acrylonitrile, butadiene, and styrene and is normally identified with an ABS marking.
- B. ADHESIVE is any substance that is used to bond one surface to another surface by attachment.
- C. ADHESIVE PRIMER is any product intended by the manufacturer to be applied to a substrate, prior to the application of an adhesive, to provide a bonding surface.
- D. AEROSOL ADHESIVE means an adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for handheld application without the need for ancillary hoses or spray equipment.
- E. ARCHITECTURAL SEALANT/PRIMER is any sealant or sealant primer intended by the manufacturer to be applied to stationary structures, including mobile homes, and their appurtenances. Appurtenances to an architectural structure include, but are not limited to: hand railings, cabinets, bathroom and kitchen fixtures, fences, rain gutters and downspouts, and windows.
- F. AUTOMOTIVE GLASS ADHESIVE PRIMER is any adhesive primer intended by the manufacturer to be applied to automotive glass prior to installation with an adhesive/sealant. This primer improves adhesion to the pinch weld and blocks ultraviolet light.

- G. CERAMIC TILE INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of ceramic tiles.
- H. CHLORINATED POLYVINYL CHLORIDE (CPVC) WELDING ADHESIVE is any adhesive intended by the manufacturer for the welding of CPVC plastic pipe. CPVC plastic is a polymer of the monomer that contains 67 percent chlorine and is normally identified with a CPVC marking.
- I. COMPUTER DISKETTE JACKET MANUFACTURING ADHESIVE is any adhesive intended by the manufacturer to glue the fold-over flaps to the body of a vinyl computer diskette jacket.
- J. CONTACT BOND ADHESIVE is any adhesive intended by the manufacturer to adhere to itself instantaneously upon contact. The adhesive is applied to both adherends and allowed to become dry, which develops a bond when the adherends are brought together without sustained pressure.
- K. CONTACT BOND ADHESIVE-SPECIAL SUBSTRATES is any contact adhesive that is intended by the manufacturer to be used for the bonding of nonporous substrates to each other, the bonding of decorative laminate in postforming application, or for the bonding of decorative laminate to metal, melamine-covered board, or curved surfaces, or when used to bond any substrate to metal, rubber, rigid plastic, or wood veneer not exceeding 1/16" in thickness.
- L. COVE BASE INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of cove base (or wall base), which is generally made of vinyl or rubber, on a wall or vertical surface at floor level.
- M. CYANOACRYLATE ADHESIVE is an adhesive with a cyanoacrylate content of at least 95 percent by weight.
- N. DRY WALL INSTALLATION is the installation of gypsum dry wall to studs or solid surfaces using an adhesive formulated for that purpose.
- O. EXEMPT COMPOUND is any of the following compounds: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides, metallic carbonates, ammonium carbonate, methane, methylene chloride (dichloromethane), 1,1,1-trichloroethane (methyl chloroform), trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113), 1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114), chloropentafluoroethane (CFC-115), chlorodifluoromethane (HCFC-22), 1,1,1-trifluoro-2,2-dichloroethane (HCFC-123), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), 1,1-dichloro-1-fluoroethane

(HCFC-141b), 1-chloro-1,1-difluoroethane (HCFC-142b), trifluoromethane (HFC-23), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), cyclic, branched, or linear completely methylated siloxanes, acetone, ethane, parachlorobenzotrifluoride (1-chloro-4-trifluoromethylbenzene), and the following classes of perfluorocarbons: (A) cyclic, branched, or linear, completely fluorinated alkanes; (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine.

- P. FLEXIBLE VINYL is nonrigid polyvinyl chloride plastic with at least five percent, by weight, of plasticizer content. A plasticizer is a material, such as a high boiling point organic solvent, that is incorporated into an adhesive to increase its flexibility, workability, or distensibility, and may be determined using ASTM Method E260-91 or from product formulation data.
- Q. FIBERGLASS is fine filaments of glass.
- R. GRAMS OF VOC PER LITER OF ADHESIVE, LESS WATER AND LESS EXEMPT COMPOUNDS is the weight of VOC per combined volume of VOC and adhesive solids, and can be calculated by the following equation:

$$\text{GramsofVOCpertofAdhesive, LessWater, LessExemptCompounds} = \frac{W_s - W_w - W_e}{V_m - V_w - V_e}$$

Where: W_s = weight of volatile compounds, in grams
 W_w = weight of water, in grams
 W_e = weight of exempt compounds, in grams
 V_m = volume of material, in liters
 V_w = volume of water, in liters
 V_e = volume of exempt compounds, in liters

S. GRAMS OF VOC PER LITER OF MATERIAL is the weight of VOC per volume of material and can be calculated by the following equation:

$$\text{GramsofVOCpertofMaterial} = \frac{W_s - W_w - W_e}{V_m}$$

Where: W_s = weight of volatile compounds, in grams
 W_w = weight of water, in grams
 W_e = weight of exempt compounds, in grams
 V_m = volume of material, in liters

T. INDOOR FLOOR COVERING INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of wood flooring, carpet, resilient tile, vinyl tile, vinyl backed carpet, resilient sheet and roll, or artificial grass. Ceramic tile installation and the installation of perimeter bonded sheet flooring with vinyl backing onto a non-porous substrate, such as flexible vinyl are excluded from this category.

U. LAMINATE is a product made by bonding together two or more layers of material.

V. LOW-SOLIDS ADHESIVE, SEALANT, OR PRIMER is any product that contains 120 grams or less of solids per liter of material.

W. MARINE DECK SEALANT/SEALANT PRIMER is any sealant or sealant primer intended by the manufacturer to be applied to wooden marine decks.

X. METAL TO URETHANE/RUBBER MOLDING OR CASTING ADHESIVE is any adhesive intended by the manufacturer to bond metal to high density or elastomeric urethane or molded rubber materials, in heater molding or casting processes, to fabricate products such as rollers for computer printers or other paper handling equipment.

Y. MULTIPURPOSE CONSTRUCTION ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of various construction materials, including but not limited to drywall, subfloor, panel, fiberglass reinforced plastic (FRP), ceiling tile, and acoustical tile.

Z. NONMEMBRANE ROOF INSTALLATION/REPAIR ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of nonmembrane roofs and that is not intended for the installation of prefabricated single-ply flexible roofing membrane. This category includes plastic or asphalt roof cement, asphalt roof coatings, and cold application cement.

AA. OUTDOOR FLOOR COVERING INSTALLATION ADHESIVE is any adhesive intended by the manufacturer for the installation of floor covering that is not in an enclosure and is exposed to ambient weather conditions during normal use.

AB. PANEL INSTALLATION is the installation of plywood, pre-decorated hardboard (or tileboard), fiberglass reinforced plastic, and similar pre-decorated or non-decorated panels to studs or solid surfaces using an adhesive formulated for that purpose.

AC. PERCENT VOC BY WEIGHT is the ratio of the weight of the VOC to the weight of the material, expressed as a percentage of VOC by weight. The percent VOC by weight can be calculated as follows:

$$\%VOC_{weight} = \left[\frac{W_v}{W} \right] \times 100$$

Where: W = Weight of VOCs in grams v
W = Weight of material in grams

AD. PERIMETER BONDED SHEET FLOORING INSTALLATION is the installation of sheet flooring with vinyl backing onto a nonporous substrate using an adhesive design to be applied only to a strip of up to four inches wide around the perimeter of the sheet flooring.

AE. PLASTIC CEMENT WELDING ADHESIVE/ PRIMER is any primer/ adhesive intended by the manufacturer to prepare plastic substrates prior to bonding or welding.

AF. PLASTIC FOAM is a foam constructed of plastics.

AG. PLASTICS are various synthetic materials chemically formed by the polymerization of organic (carbon-based) substances.

AH. POLYVINYL CHLORIDE (PVC) WELDING ADHESIVE is any adhesive intended by the manufacturer for the welding of PVC plastic pipe. PVC plastic is a polymer of the chlorinated vinyl monomer that contains 57 percent chlorine and which is normally identified with a PVC marking.

AI. POROUS MATERIAL is a substance that has tiny openings, often microscopic, in which fluids may be absorbed or discharged. Such materials include but are not limited to wood, paper, and corrugated paperboard.

AJ. PROPELLANT is a fluid under pressure that expels the contents of a container when a valve is opened.

AK. ROADWAY SEALANT is any sealant intended by the manufacturer to be applied to public streets, highways, and other surfaces, including but not limited to curbs, berms, driveways, and parking lots.

AL. RUBBER includes any natural or manmade rubber substrate, including but not limited to: styrene-butadiene rubber (SBR), polychloroprene (neoprene), butyl rubber, nitrile rubber, chlorosulfonated polyethylene (CSM), and ethylene propylene diene terpolymer (EPDM).

AM. SEALANT PRIMER is any product intended by the manufacturer to be applied to a substrate, prior to the application of a sealant, to enhance the bonding surface.

AN. SEALANT is any material with adhesive properties that is formulated primarily to fill, seal, waterproof, or weatherproof gaps or joints between two surfaces. Sealants include sealant primers and caulks.

AO. SHEET-APPLIED RUBBER INSTALLATION is sheet rubber lining applied to the interior walls of stationary tanks and rail cars.

AP. SINGLE-PLY ROOF MEMBRANE is single sheets of rubber, normally EPDM (ethylene-propylene diene terpolymer), that are applied in a single layer to a building roof (normally a flat roof).

AQ. SINGLE-PLY ROOF MEMBRANE INSTALLATION/REPAIR ADHESIVE is any adhesive intended by the manufacturer for the installation or repair of single-ply roof membrane. Installation includes, as a minimum, attaching the edge of the membrane to the edge of the roof and applying flashings to vents, pipes, and ducts that protrude through the membrane. Repair includes gluing the edges of tears together, attaching a patch over a hole, and reapplying flashings to vents, pipes, or ducts installed through the membrane.

AR. SINGLE-PLY ROOF MEMBRANE ADHESIVE PRIMER is any primer intended by the manufacturer to clean and promote adhesion of the single-ply roof membrane seams or splices prior to bonding.

AS. SINGLE-PLY ROOF MEMBRANE SEALANT is any sealant intended by the manufacturer to be applied to single-ply roof membrane.

AT. STRUCTURAL GLAZING ADHESIVE is any adhesive intended by the manufacturer to adhere glass, ceramic, metal, stone, or composite panels to exterior building frames.

AU. SUBFLOOR INSTALLATION is the installation of subflooring material over floor joists, including the construction of any load bearing joists. Subflooring is covered by a finish surface material.

AV. SURFACE PREPARATION SOLVENT is a solvent used in the cleaning of a substrate to remove dirt, oil, and other contaminants. This surface cleaning is typically done prior to the application of primers, adhesives, or sealants.

AW. THIN METAL LAMINATING ADHESIVE is any adhesive intended by the manufacturer to bond multiple layers of metal to metal or metal to plastic in the production of electronic or magnetic components in which the thickness of the bondline(s) is less than 0.25 mils.

AX. TIRE REPAIR is the expanding of a hole, tear, fissure, or blemish in a tire casing by grinding or gouging, applying adhesive, and filling the hole or crevice with rubber.

AY. TIRE RETREAD ADHESIVE is any adhesive intended by the manufacturer to be applied to the back of precure tread rubber and to the casing and cushion rubber. It may also be used to seal buffed tire casings to prevent oxidation while the tire is being prepared for a new tread.

AZ. TRAFFIC MARKING TAPE is preformed reflective film intended by the manufacturer to be applied to public streets, highways, and other surfaces, including but not limited to curbs, berms, driveways, and parking lots.

BA. TRAFFIC MARKING TAPE ADHESIVE PRIMER is any primer intended by the manufacturer to be applied to surfaces prior to installation of traffic marking tape.

BB. VOLATILE ORGANIC COMPOUND (VOC) is any compound containing at least one atom of carbon, excluding exempt compounds (see definition M).

BC. WATERPROOF RESORCINOL GLUE is a two-part resorcinol-resin-based adhesive designed for applications where the bond line must be resistant to conditions of continuous immersion in fresh or salt water.

III. REQUIREMENTS

A. Standards: A person shall not apply adhesives, sealants, or adhesive or sealant primers that have a VOC content (gram/liter [g/l], less water and exempt compounds) in excess of the following limits (for low-solids adhesives, sealants, or primers, the VOC content is based on a g/l of material basis):

VOC LIMITS VOC LIMITS
(Effective 1/1/2009)

	(g/l)
(1) Adhesives:	
ABS welding	400
Ceramic tile installation	130
Computer diskette jacket manufacturing	850
Contact Bond	250
Contact Bond-Specialty Substrates	400
250* (effective 1/1/2001)	
Cove base installation	150
CPVC welding	490
Indoor floor covering installation	150
Metal to urethane/rubber molding or casting	850
Multipurpose construction	200
Nonmembrane roof installation/repair	300
Other plastic cement welding	510
Outdoor floor covering installation	250
PVC welding	510
Single-ply roof membrane installation/repair	250
Structural glazing	100
Thin metal laminating	780
Tire retread	100
Perimeter bonded sheet vinyl flooring installation	660
Waterproof Resorcinol Glue	170
Sheet-Applied Rubber Installation	850

VOC LIMITS

	(g/l)
(2) Sealants:	
Architectural	250
Marine deck	760
Nonmembrane roof installation/repair	300
Roadway	250
Single-ply roof membrane	450
Other	420
(3) Adhesive Primers:	
Automotive glass	700
Plastic cement welding	650
Single-ply roof membrane	250
Traffic marking tape	150
Other	250
(4) Sealant Primers:	
Architectural	
- Non porous	250
- Porous	775
Marine deck	760
Other	750

(5) Adhesives Application Onto Substrate:

Flexible vinyl	250
Fiberglass	200
Metal	30
Porous material	120
Rubber	250
Other substrates	250

If an adhesive is used to bond dissimilar substrates together, the applicable substrate category with the highest VOC content shall be the limit for that operation.

If an operator uses an adhesive or sealant subject to section III.A.(1), III.A.(2), III.A.(3), or section III.A.(4), the requirement in that section is applicable rather than that in section III.A.(5).

B. [Reserved]

C. Cleanup Solvent:

(1) No person shall use materials containing VOC for the removal of adhesives, sealants, or adhesive or sealant primers from surfaces, other than spray application equipment, unless the composite vapor pressure of the solvent used is less than 45 mm of Hg at 20 C.

(2) Spray application equipment: Either one of the following shall be used for cleaning, flushing or soaking of filters, flushing lines, pipes, pumps, and other parts of the application equipment:

(a) An enclosed cleaning system, or an equivalent cleaning system as determined by the test method referenced in section VI.I, or

(b) A solvent with a VOC content of 70 grams of VOC per liter of material, or less. Parts containing dried adhesive may be soaked in an organic solvent as long as the composite vapor pressure, excluding water and exempt compounds, of the solvent is 9.5 mm of Hg at 20 C or less and is kept in a closed container, which shall be closed except when depositing or removing parts or materials from the container.

D. Surface Preparation Solvent: No person shall use materials containing VOCs for surface preparation, except for single-ply roofing, unless the VOC content of the solvent is less than 70 g/l. The composite vapor pressure, excluding water and exempt compounds, of the surface preparation solvent used for single-ply roofing shall not exceed 45 mm of Hg at 20 C effective (date of adoption).

E. A person may comply with the provisions of subsections III.A, C, and D by using approved add-on air pollution control equipment, provided that:

(1) The VOC emissions from such operations and/or materials are reduced by at least 85 percent overall capture and destruction efficiency, by weight,

(2) Combustion temperature is continuously monitored when operating a thermal incinerator,

(3) Inlet and exhaust gas temperatures are continuously monitored when operating a catalytic incinerator,

(4) Control device efficiency is continuously monitored when operating a carbon adsorber or control device other than a thermal or catalytic incinerator, and

(5) Written approval for such equipment, from the Air Director.

F. Storage of VOC Containing Materials: All VOC containing materials, including VOC-laden cloth or paper used in stripping cured adhesives, shall be stored or disposed in non-absorbent containers, which shall be closed except when depositing or removing materials from the container.

G. Prohibition of Sales:

(1) Except as provided in subsections III.G.(3) and III.G.(4) after the specified effective dates, no person shall supply, sell, or offer for sale any adhesive, sealant, or adhesive or sealant primer which, at the time of sale, exceeds the corresponding VOC limit listed in subsections III.A.(1), (2), (3), or (4), and is defined under a product category in those subsections. This provision only applies to products that are supplied to or sold to persons within the State.

(2) Except as provided in subsections III.G.(3) and III.G.(4), no person shall supply, sell, or offer for sale, any aerosol adhesive which, at the time of sale, exceeds the VOC limits listed in subsection III.B. after the specified effective dates.

(3) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to any supplier or seller of any adhesive, sealant, or adhesive or sealant primer as follows:

(a) Any adhesive shipped outside of the State for use outside of the State.

(b) The sale of adhesives to a user who has installed a State permitted VOC add-on control device.

(4) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to any manufacturer of any adhesive, sealant, or adhesive or sealant primer if the manufacturer has provided the maximum VOC content per subsection III.H and if:

(a) The product was not sold directly to a user or a sales outlet located in the State, or

(b) The product was sold to an independent distributor that is not a subsidiary of, or under the direct control of, the manufacturer.

(5) The sales prohibition in subsections III.G.(1) and III.G.(2) shall not apply to the sale of any adhesive or sealant, or aerosol adhesive, except plastic cement welding adhesives, if:

(a) The product is sold in any container(s) having a capacity of 16 fluid ounces or less (net volume) or one pound or less (net weight); and

(b) The total net weight or volume of two or more containers packaged together must be equal to or less than one pound or 16 fluid ounces, respectively, to qualify for this exemption.

H. Compliance Statement Requirement: The manufacturer of any adhesive, sealant, or adhesive or sealant primer subject to this rule shall display the maximum VOC content as supplied, determined by the appropriate test method, on labels or containers. This designation shall display recommendations regarding thinning, reducing, or mixing with any other VOC containing material. This information shall include the maximum VOC content on an as-applied basis when used in accordance with the manufacturer's recommendations.

I. Prohibition of Specification: No person shall solicit, require for use, or specify the application of any adhesive, primer, or sealant if such use or application results in a violation of the provisions of this rule. This prohibition shall apply to all written or oral contracts.

IV. EXEMPTIONS

A. The provisions of this rule shall not apply to the following:

(1) Adhesives used in tire repair operations, provided a label on the adhesive used states "For Tire Repair Only."

(2) Adhesives used in the assembly and manufacturing of undersea-based weapon systems.

(3) Adhesives, sealants, adhesive primers or sealant primers being tested or evaluated in any research and development, quality assurance, or analytical laboratory, provided that the following records are maintained and made available to State personnel for a period of at least two years:

(a) A list of all such materials used, which at a minimum includes the manufacturer's identification, the product category of the material or type of application, and the VOC content of each material.

(b) Such records shall be retained in accordance with the provisions of section V of this rule.

(4) Solvent welding operations used in the manufacturing of medical devices.

(5) Plaque laminating operations where adhesives are used to bond a clear, polyester acetate laminate to wood with lamination equipment installed prior to July 1, 1992. Any person seeking to claim this exemption shall notify the Air Director in writing that a complying adhesive is not available.

(6) Adhesives and sealants that are regulated by other State rules.

(7) Adhesives and sealants that contain less than 20 grams of VOC per liter of adhesive or sealant, less water and less exempt compounds, as applied.

(8) Adhesives subject to [state consumer product regulation].

(9) Cyanoacrylate adhesives.

(10) Adhesives, sealants, or adhesive or sealant primers, which are sold or supplied by the manufacturer or suppliers in containers of 16 fluid ounces or less, except plastic cement welding adhesives.

B. The provisions of this rule except Section III.G (Prohibition of Sales), shall not apply if the total VOC emissions from all adhesives, sealants, adhesive primers and sealant primers applied at the stationary source are less than 200 lb per calendar year (or an equivalent volume). Any person claiming this exemption shall record and maintain monthly operational records that can substantiate this claim.

C. The provisions of section III.A, III.B, and III.C shall not apply to the use of any adhesive, sealant, or adhesive or sealant primer, or clean up solvents provided the total volume of noncomplying adhesives, sealants, primers, and cleanup solvents applied facility-wide does not exceed 55 gallons per calendar year. Any person seeking to claim this exemption shall notify the Air Director in writing, for each formulation, that a complying adhesive, sealant, primer, or solvent is not available. Any person claiming this exemption shall record and maintain monthly operational records that can substantiate this claim.

V. ADMINISTRATIVE REQUIREMENTS

A. Recordkeeping - Any person who applies an adhesive subject to this rule for compensation shall:

(1) Maintain a current list of each adhesive, sealant, adhesive or sealant primer, and solvent in use and in storage. The file shall provide all of the data necessary to evaluate compliance and shall include, but not be limited to, the following information, as applicable:

(a) A data sheet or material list giving the material name, manufacture identification, and material application.

(b) Any catalysts, reducers, or other components used and the mix ratio.

(c) The applicable VOC content limit or vapor pressure limit from section III and the actual VOC content, as applied, or vapor pressure of the adhesive, sealant, primer, or solvent.

(2) Maintain records of the monthly volume of each adhesive, sealant, primer, or solvent used.

(3) When compliance is achieved through the use of add-on control equipment, maintain records on a daily basis of key operating parameters for the emission control equipment, including, but not limited to:

(a) Hours of operation

(b) Routine and nonroutine maintenance

(c) The applicable information specified in section III.E.

(d) The daily volume of each noncompliant adhesive, sealant, primer, or solvent used.

(4) All records shall be maintained for at least two ~~(2)~~ 3 years and shall be available for inspection.

VI. TEST METHODS

A. The VOC and solids content of all nonaerosol adhesives, adhesive primers, and cleaning solvents, except as specified in section VI.D., shall be determined using U.S. EPA Reference Method 24 (40 CFR Part 60, Appendix A) or South Coast AQMD Method 304.

B. Exempt organic compounds shall be determined using ASTM D4457-85. For exempt compounds where no reference test method is available, a facility requesting the exemption shall provide appropriate test methods approved by the Air Director and approvable by the U.S. EPA..

C. The VOC content of aerosol adhesives shall be determined using South Coast Test Method 305 or ARB Method 310 . The VOC content of aerosol adhesive primers shall be determined using ARB Method 310 or South Coast AQMD Method 305 for Aerosol Coatings.

D. The VOC content of any plastic welding cement adhesive or primer shall be determined using South Coast AQMD Method 316A.

E. The composite vapor pressure of organic compounds in cleaning materials shall be determined by quantifying the amount of each compound in the blend using gas chromatographic analysis (ASTM E 260-91) for organics and ASTM D3792-79 for water content, as applicable, and the following equation:

Where:

$$Pp_c = \frac{\sum_{i=1}^n (W_i)(VP_i)/Mw_i}{W_w/Mw_w + \sum_{i=1}^n W_e/Mw_e + \sum_{i=1}^n W_i/Mw_i}$$

Ppc = VOC composite partial pressure at 20 C, in mm Hg

Wi = Weight of the "i"th VOC compound, in grams, as determined by ASTM E 260-91

Ww = Weight of water, in grams as determined by ASTM D 3792-86

We = Weight of the "i"th exempt compound, in grams, as determined by ASTM E 260-91.

Mwi = Molecular weight of the "i"th VOC compound, in grams per g-mole, as given in chemical reference literature

Mww = Molecular weight of water, 18 grams per g-mole

Mwe = Molecular weight of the "i"th exempt compound, in grams per g-mole, as given in chemical reference literature.

Vpi = Vapor pressure of the "i"th VOC compound at 20 C, in mm Hg, as determined by subdivision (5) of this section

F. The vapor pressure of each single component compound may be determined from ASTM D2879-86 or may be obtained from a published source approved by the Air Director, such as the sources referenced in 40 CFR 52.741, or the most current edition of a published source, including, but not limited to: a). The Vapor Pressure of Pure Substances, Boublik, Fried, and Hala; Elsevier Scientific Publishing Company, New York; b) Perry's Chemical Engineer's Handbook, McGraw-Hill Book Company; c) CRC Handbook of Chemistry and Physics, Chemical Rubber Publishing Company; and d) Lange's Handbook of Chemistry, John Dean, editor, McGraw-Hill Book Company.

G. The measurement of capture efficiency of an emission control system shall be conducted and reported in accordance with the recently approved U.S. EPA Technical Document "*Guidelines for Determining Capture Efficiency*," issued January 9, 1995, or a district capture efficiency determination method approved by the U.S. EPA.

H. The measurement of control efficiency shall be in accordance with U.S. EPA Methods 25, 25A, 25B, or ARB Method 100.

I. The active and passive solvent losses from spray gun cleaning systems shall be determined using South Coast AQMD's "General Test Method for Determining Solvent Losses from Spray Gun Cleaning Systems," dated October 3, 1989. The test solvent for this rule shall be any lacquer thinner with a minimum vapor pressure of 105 mm of Hg at 20 C, and the minimum test temperature shall be 15 C.